

Chapter 2

Crafting Age-Specific National Accounts: National Transfer Accounts Data and Methods for Italy

Abstract This chapter presents the main data sources and methods used to estimate the deficit LCD and age reallocation for Italy in 2008, based on the methodological and conceptual NTA framework. Specifically, it aims to make visible the linkage between the global NTA methodology published by the United Nations, the European NTA methodology developed within the AGENTA project and using Eurostat's harmonized data sources, and detailed single-country NTA estimates referring to Italy as a case study. The use of national data sources has been shown to bring a number of advantages in terms of providing valuable insights at the national level without significantly affecting inter-country comparability. However, this would not be possible without the global NTA manual and the underlying research effort to standardize definitions and methodologies. Meanwhile, the use of a European methodology built on harmonized Eurostat data sources represents a logical step toward the systematic generation of accounts for all European countries.

2.1 Introduction

The NTA has its theoretical roots in foundation research by Samuelson (1958) that paved the way for a flourishing literature on intergenerational transfers. The methodological framework originated in the early 1990s (see Lee 1994a, b). The first version of the NTA manual was made available in 2009 (Mason et al. 2009). The methods have been further developed by a dedicated working group and discussed during numerous meetings and workshops. These efforts have been summarized in a book edited by Lee and Mason (2011) illustrating the methodology, applications to several countries, and new NTA research directions. Finally, an official NTA manual was published by the United Nations (2013). The manual contains detailed conceptual, methodological, and practical explanations.

Today, the NTA project relies on the participation of more than 40 countries on four continents. Since its beginning the project has been co-directed by Ronald Lee and Andrew Mason. The lead institutions are the Center for the Economics and

Demography of Aging, University of California, Berkeley and the East-West Center at the University of Hawaii at Manoa. As the project has been extended to a growing number of countries, regional centers based at the East-West Center (for Asia), the Economic Commission for Latin America and the Caribbean in Santiago, the African Economic Research Consortium in Nairobi, and the Vienna Institute of Demography have been established. The project is organized into national teams of researchers. Due to the heterogeneity of the countries that participate in the project, specific data sources (and sometimes also specific methods) used by national teams to develop the accounts can vary. Despite the existence of differences in data availability, definitions, and collection, a great deal of effort has been expended in standardizing the methodologies and making the results comparable across NTA countries around the world.

At the European level, the project has received funding for the development of the AGENTA project (<http://www.agenta-project.eu/en/index.htm>). AGENTA builds on the methodological and research NTA framework to analyze the past and forecast the future of intergenerational transfers in aging European societies. Among the distinctive contributions of AGENTA to NTA research are the development of a harmonized methodology for European countries, thanks to the existence of common data sources, standards, and definitions provided by Eurostat. The methodology describing the standard procedure for generating NTAs for European countries from Eurostat data has been published in a manual freely available at the project website (Istenič et al. 2016).

The NTA methodology can be implemented at different interconnected geographical levels: (i) the UN methodology containing the fundamental concepts, methods, and definitions at the global level; (ii) the harmonized methodology for macro-geographic areas, as in the case of the AGENTA manual for European countries; and (iii) detailed data and methods for country-specific estimates. This chapter describes the general NTA methodology and presents the specific data and methods used for Italy, with the aim of emphasizing the link between the global, European, and country-specific NTA methodologies.

In order to develop the NTA estimates for Italy presented in this volume, harmonized data provided by Eurostat have been used only when no additional information was available from national-level data sources, so the European System of National Accounts (ESA) has been used as the data source for economic macro-aggregates. In many cases, original microdata files produced by Italy's National Institute for Statistics (Istat) and using the framework of European statistics on persons and households have been used. Eurostat regulates and coordinates statistics for the European Union, but it does not collect data directly. Data are collected and prepared at the national level by the statistical authorities of member states and transmitted to Eurostat, which processes and publishes comparable statistics. In the process of harmonizing statistics, part of the original information collected by national statistical offices can be lost, so there are cases in

which using the original national data can offer advantages in term of information. For example, the original microdata from the Italian survey on living conditions (abbreviated as UDB IT-SILC below) provided by Istat in the framework of the European Statistics on Income and Living Conditions (EU-SILC) have been used.¹ In the EU-SILC's harmonized data, final ages are aggregated into the 80+ age group, whereas the UDB IT-SILC reports detailed age breakdowns for the elderly component of the population. Therefore, using original data from the UDB IT-SILC allows for more detailed estimates of older age groups up to age 90.²

The chapter is structured as follows. Sections 2.2 and 2.3 provide general explanations of the NTA approach. Section 2.2 introduces the LCD, the NTA identity, and the age reallocation system; Sect. 2.3 describes the general procedure implemented to estimate NTA age profiles; and Sect. 2.4 provides an initial insight into the necessary analysis for the economic lifecycle. Later sections offer an explanation of the specific data and methods used to estimate age profiles of the LCD's components: labor income (Sect. 2.5); private consumption (Sect. 2.6) detailed for education (Sect. 2.6.1), health (Sect. 2.6.2) and private consumption other than education and health (Sect. 2.6.3); and public consumption (Sect. 2.7) detailed for education (Sect. 2.7.1), health (Sect. 2.7.2). Sections 2.8 and 2.9 respectively introduce the public and private intergenerational reallocation systems and the specific data and methods used to estimate the age profiles of their components, which consist of public (Sect. 2.8.1) and private transfers (Sects. 2.9.1 and 2.9.2) and public and private asset incomes (Sects. 2.8.2 and 2.9.3). Section 2.10 describes the procedure for smoothing and macro-adjustments. Section 2.11 concludes.

2.2 An Overview of the National Transfer Accounts Approach

The NTA estimates the economic flows occurring across age groups of a country's residents over a calendar year. Estimates of NTA age flows are consistent with the corresponding population totals as reported in the SNA, but the NTA differs from the SNA by referring to individuals rather than institutional sectors as the basic unit of analysis; institutional sectors are treated as intermediaries in economic flows among individuals. The United Nations (2013) offers an exhaustive explanation of NTA concepts and methods.

¹Microdata were accessed and elaborated at the Istat Laboratory for Elementary Data Analysis (Adele).

²Age 90 has been set as the upper limit for detailed analysis in this volume due to the extremely small number of people over 90.

The NTA builds on the following economic identity:

$$\underbrace{C(x) - Y^l(x)}_{\text{LCD or LCS}} = \underbrace{\tau^+(x) - \tau^-(x)}_{\text{Transfers}} + \underbrace{Y^A(x) - S(x)}_{\text{Asset-based reallocations}}, \quad (2.1)$$

where C is the consumption, Y^l is the labor income, Y^A is the asset income, S is the savings, and τ^+ and τ^- are the transfers received and paid through the public and the private sector at each age x .

The NTA identity holds in both per capita and aggregate terms, includes both the public and private sectors, and can be detailed for the most relevant age-related portions of consumption and reallocation, such as health, education, or pensions.

The left side of the economic identity represents the LCD or LCS given by the difference between public and private consumptions and labor income by age. A positive difference indicates the existence of an LCD, meaning that consumption falls short of labor income and must be financed through public and private reallocations. A negative difference indicates an LCS, which occurs when labor income exceeds consumption and thus can be saved or transferred to other individuals through the family, the state, or both.

In per capita terms, the economic lifecycle is determined by the interaction of contextual and behavioral factors affecting the relationship between ages on the one hand and consumption and labor income on the other. At the aggregate level, the economic lifecycle reflects both the population age structure and the per capita age profiles.

The right side of the identity represents the intergenerational reallocation system consisting of transfers and asset-based reallocations. Transfers consist of economic flows that do not involve exchange transactions (the explicit exchange of goods and services). Asset-based reallocations consist of asset income that is not saved, where asset income is income from capital and property, including interest payments, dividends, and the rental value of use of a home belonging to the occupant. Asset-based reallocations are inter-temporal exchanges; resources acquired in the past can be used to finance current consumption or saved for the future. Both transfers and reallocations shift resources from surplus ages to deficit ages through the public and private sectors.

The public sector is represented by the state, which in the NTA is an intermediary that realizes intergenerational reallocations by providing services like public programs for education, health, and pensions and goods such as security, receiving taxes, and accumulating public assets and liabilities (saving) or debt (dis-saving). The private sector is represented by households and nonprofit institutions serving households (NPISH) and realizes intergenerational reallocation mainly through cash transfers,³ accumulation of assets, or savings. However, the vast majority of

³According to the SNA, capital transfers (such as bequests and similar large transfers) are not current transfers and are thus not included in the NTA flow account. However, research is

private transfers are mediated by households. Transfers are further distinguished by those taking place among members of the same household (intra-household transfers) and between members of different households (inter-household transfers).

2.3 National Transfer Accounts Age Profiles

Constructing the NTA requires age-specific information on a number of economic activities: age profiles of public and private consumptions, labor income, public and private transfers inflows received and outflows paid, public and private savings, and asset income. However, economic data are only available from the SNA in the form of population aggregates; there is no information on how the economic aggregates break down by age. The NTA seeks to fill this information gap by developing a satellite account for and with age-specific economic data. NTA age profiles are thought to be consistent with the corresponding macro-aggregates in the SNA, with one main exception; private household transfers are not recorded in the SNA. However, transfers occurring within and/or between households represent a fundamental resource in the intergenerational reallocation system and are an essential aspect of the generational economy. The NTA also complements the SNA by providing measures of transfers occurring at the household level.

Estimating age profiles is a fairly complex process that involves the following steps for each economic activity being considered:

1. Identify macro-aggregate values in the SNA;
2. Find the most appropriate available information to distribute macro-aggregates by age. Age proxy information can consist of administrative data or micro-level survey data;
3. Individuate a proper age allocation criterion on the basis of the available age information and the nature of the specific activity. Age allocation criteria consist of equivalence scales that can be found in the literature or inferred through data;
4. Make preliminary estimates of per capita and aggregate age profiles. Aggregate age profiles are obtained as the product between per capita age profiles and the corresponding population size;
5. Smooth age profiles, if necessary (explanations in this regard are reported in Sect. 2.10);
6. Prepare final estimates of per capita and aggregate age profiles. Age profiles are adjusted using a multiplicative factor to ensure their consistency with SNA measures, so that the sum over all age groups equals the corresponding aggregate in the SNA.

(Footnote 3 continued)

currently underway within the NTA project to construct wealth accounts that incorporate capital transfers.

Building the NTA requires extensive data collecting from multiple sources and in-depth analysis of available information together with the use of appropriate calculation methods. In particular, an important aspect of the methodology consists of mapping from the SNA classification of economic variables onto the NTA classification system to ensure correspondence between the two accounts. Macro-aggregates for European countries can be found in the ESA (Eurostat 2013) and are accessible through Eurostat; more details are available in the AGENTA manual (Istenič et al 2016). The choice of 2008 as the reference year for the estimates was motivated by the need to combine different data sources while using the most recent homogeneous data available.

2.4 The Economic Lifecycle

As noted above, the NTA estimates the LCD by comparing age profiles of public and private consumptions and labor income. Macro-aggregates of consumption and labor income are found in sector accounts (Eurostat 2008a), which are published within the annual national accounts. Sector accounts consist of a systematic description of the economic activities by institutional sector. Institutional sectors are institutional units with similar characteristics and behaviors: households and NPISH, nonfinancial corporations, financial corporations, general government, and the rest of the world.

To take into account the different nature of consumption activities, the NTA distinguishes between three main categories: education, health, and consumption other than education and health. The first two are age-sensitive activities and the third is a residual category that includes all remaining types of consumption activities. Macro-aggregates for the three categories are found in the Final Consumption Expenditure of Households by Consumption Purpose (Eurostat 2008b) and the general government expenditure by function (Eurostat 2008c) for private and public consumption, respectively. Eurostat's classifications of private and public consumptions by purpose and function follow the SNA classifications (United Nations 2000)⁴ of individual consumption according to the purpose (COICOP) and classification of the functions of government (COFOG).

Table 2.1 provides an initial insight into the anticipated results and the necessary analysis for the economic lifecycle. As shown, macro-aggregate values are obtained from the SNA (except for the LCD, the aggregate of which must be estimated as the difference between consumption and production by age) and must be disaggregated into single-year age groups from ages 0 to age 89, with age 90 including anyone

⁴This classification was approved by the United Nations Statistical Commission in May 1999. A previous version of the classification, known as the functional classification, was included in the 1993 version of the SNA.

Table 2.1 LCD, values at current prices, Italy 2008

LCD and its components	€ (Millions)	Age				
		0	...	x	...	90+
LCD	259,521					
Consumption	1,089,769					
Public consumption	315,406					
<i>Education</i>	60,661					
<i>Health</i>	108,330					
<i>Other</i>	146,415					
Private consumption	774,363					
<i>Education</i>	7169					
<i>Health</i>	22,417					
<i>Other</i>	744,777					
Labor income	830,248					
Earnings	680,279					
Self-employment	149,969					

Source Author's elaboration on Eurostat data (Eurostat 2008a, b, c)

older than 90. The methods and data used to disaggregate SNA totals by age are described in detail in subsequent sections of this chapter.

2.5 Labor Income

Labor income consists of paid wages and self-employment, corresponding to the following components of SNA: compensation of employees, labor's share of taxes less subsidies on production, and labor's share of mixed income. Aggregates are reported in Table 2.3 in the Appendix.

Compensation of employees encompasses all compensation for work, including employee cash income, employee noncash income, and employers' social insurance contributions. Cash income refers to the monetary component of the compensation of employees and consists of wages, salaries, and employers' social contributions (the value of taxes paid to the government on behalf of employees). Noncash employee income refers to benefits, such as a company car and associated costs, free or subsidized meals, etc.

Self-employment labor income consists of the portion of gross mixed income in return for labor, while the remaining share of entrepreneurial income is designated as a return to capital. Labor's share of mixed income is not reported in the SNA and hence must be estimated. The NTA, in the absence of information to the contrary, assumes two-thirds of mixed income to be labor income.

Labor income age profiles are based on living condition survey microdata from Istat (Indagine sulle condizioni di vita, 2009). The UDB IT-SILC microdata are part of the EU-SILC. As noted above, original Italian microdata have been used in order to obtain estimates for advanced ages up to 90 years and above. The UDB IT-SILC data come from a survey panel conducted annually on a nationally representative random sample of around 26,000 households and 70,000 individuals distributed across 800 municipalities in Italy. The survey aims to collect timely and comparable cross-sectional and longitudinal microdata on income, poverty, social exclusion, and living conditions. Information on social exclusion and housing conditions is collected at the household level, whereas labor, education, and health information are collected at the individual level for those aged 16 and above. Age profiles of labor income and its main components can be calculated directly from the microdata as individual averages by age.

2.6 Private Consumption

Macro-aggregate values of expenditures divided into education, health, and other private consumption expenditures are found in Eurostat in the Final Consumption Expenditure of Households by Consumption Purpose (Table 2.4 in the Appendix). The economic aggregate of consumption classified by purpose differs from that of total private consumption as reported in the sector accounts, because COICOP private consumption expenditures are adjusted with a multiplicative factor.

The Household Budget Survey (HBS; Istat, *Indagine sui Consumi delle famiglie* 2008a) is used as proxy information to allocate private consumption by age. HBS is a nationally representative survey focusing on household expenditures on goods and services. Most EU countries launched an HBS at the beginning of the 1960s; Eurostat has collected and published them every 5 years since 1988. Although there have been continuous efforts toward harmonization, differences across countries regarding frequency, timing, contents, and structure of the survey remain. The Italian HBS sample for 2008 has a two-level structure. The primary level consists of approximately 470 municipalities, randomly selected and proportional to their demographic size, that represent the whole country; the second level consists in approximately 28,000 randomly selected households. HBS provides information regarding household consumption expenditures on goods and services, with considerable detail in terms of expenditure categories and including many demographic and socioeconomic characteristics. The HBS is a fundamental tool that is valuable for describing, analyzing, and interpreting the spending behavior of resident households. Data on expenditures are collected at the household level, whereas socio-demographic data are collected at the individual level for household members. Thus, estimates of age profiles of private consumption pose an additional challenge; the age schedule of the economic activity cannot be observed at the individual level, as it can for labor income estimates, meaning that aggregate data at the household level must be allocated to individuals according to their ages. The

age criteria for this allocation vary according to the nature of the expenditure and are described in the following subsections.

2.6.1 Private Education Consumption

Private education consumption includes books, school supplies (for all levels including pre-school), tutoring expenses, tuition and fees, and all other household expenditures related to education. In the NTA methodology (United Nations 2013), the following linear model is used to assign private education consumption to household members according to age:

$$CFE_j = \sum_{x=0}^{90+} \alpha(x) \cdot E_j(x) + \varepsilon_j \quad \text{with } \alpha(x) \geq 0, \quad (2.2)$$

where CFE_j is the private education consumption of household j , $E_j(x)$ is the number of enrolled members aged x in household j ,⁵ and $\alpha(x)$ are the parameters to be estimated. Parameter estimates $\hat{\alpha}(x)$ obtained through the least squares criterion are used to redistribute the education consumption of each household j to the E_j number of household components enrolled in an education program by age x . In other words, parameter estimates can be considered the weights of a data-driven equivalence scale:

$$CFE_j(x) = [\hat{\alpha}(x) \cdot E_j(x)] \frac{CFE_j}{\sum_{x=0}^{90+} \hat{\alpha}(x) \cdot E_j(x)}. \quad (2.3)$$

2.6.2 Private Health Consumption

Private health consumption includes out-pocket health expenditures, employer provision of medical services to employees, and reimbursements to health providers by private health insurance companies. Methods to estimate age profiles of private consumption vary across countries due to differences in data availability (see United Nations 2013). In principle, having information about the recipients of expenditures within the household would allow private health consumption to be assigned to household members according to age, similar to education:

⁵Enrolled members are students receiving formal education or those enrolled in other education programs. Information about enrolled members is available in the HBS.

$$CFH_j = \sum_{x=0}^{90+} \beta(x) \cdot N_j(x) + \varepsilon_j \quad \text{with } \beta(x) \geq 0, \quad (2.4)$$

where CFH_j is the private health consumption for household j , $N_j(x)$ is the number of household j members aged x , and $\beta(x)$ are the parameters to be estimated. However, the Italian data, like most household expenditure surveys, do not report utilization measures for health spending. Therefore, the regression approach has one important limitation; while on the one hand the number of enrolled household members by age represents a reliable variable to identify which individuals in the household benefit from this particular household expenditure; in the case of private health consumption there is no information to capture in order to assign individuals to which the expense should be attributed. As a consequence, the model yields negative parameter estimates and significant standard errors for some age groups.

For the reason explained above, an alternative approach consisting of an iterative proportional fitting procedure (IPFP) has been implemented. The IPFP was originally designed by Deming and Stephan (1940) for the adjustment of frequencies in contingency tables. Later, the IPFP was applied to several statistical problems in different domains. In our case, knowing for each sampled household the age distribution of its components and its expenditures on health allows for health consumption by age to be estimated, subject to the following constraints: (i) total consumption of members of household j must be equal to the expenditure incurred by the household j ; and (ii) per capita values of consumption by age do not vary across households.

In a first step, the IPFP assigns health expenditures equally to each household member:

$$\hat{CFH}_j^1(x) = CFH_j \frac{N_j(x)}{\sum_{x=0}^{90+} N_j(x)}. \quad (2.5)$$

Based on this preliminary allocation, per capita age profiles are estimated:

$$\hat{PFH}_j^1(x) = \frac{\sum_{j=1}^n \hat{CFH}_j^1(x) \cdot w_j}{\sum_{j=1}^n N_j(x) \cdot w_j} = \frac{\hat{CFH}^1(x)}{\hat{N}(x)}, \quad (2.6)$$

where n is the sample household size and w_j is the sample weight for the household j .

In the next step, expenditure is allocated proportionally to the per capita age profiles previously obtained:

$$CFH_j^2(x) = CFH_j \frac{\hat{PFH}^1(x) \cdot N_j(x)}{\sum_{x=0}^{90+} \hat{PFH}^1(x) \cdot N_j(x)}. \quad (2.7)$$

Once again, the values obtained are used for new estimates of per capita age profiles:

$$\hat{PFH}_j^2(x) = \frac{\sum_{j=1}^n \hat{CFH}_j^2(x) \cdot w_j}{\sum_{j=1}^n N_j(x) \cdot w_j} = \frac{\hat{CFH}^2(x)}{\hat{N}(x)}. \quad (2.8)$$

The procedure is repeated until the maximum difference between the per capita age profiles of two successive steps is lower or equal to a predetermined value δ (with $\delta = 1$ euro).

2.6.3 *Private Consumption Other Than Education and Health*

Other private consumption is a residual category that includes all expenditures not designated for education and health. Other household consumption is allocated using an ad hoc equivalent scale suggested by the NTA and based on an extended review of the existing literature on household consumption. More specifically, the NTA allocates household consumption to household members proportionally to a scale with a constant value equal to 0.4 for children aged 0–4 years, a linearly increasing value from 5 to 19 years, and a value of 1 for 20 years of age and older. The values of the equivalence scale do not vary across households or across countries. However, age profiles of consumption do vary as a result of differences in total household consumption and household composition, along with the interaction between the two (United Nations 2013). Therefore, with CFO_j as other private consumption for household j , $N_j(x)$ as the number of household members aged x , and $\gamma(x)$ as the value of the equivalence scale at age x , other consumption is allocated as follows:

$$CFO_j(x) = [\gamma(x) \cdot N_j(x)] \frac{CFO_j}{\sum_{x=0}^{90+} \gamma(x) \cdot N_j(x)}. \quad (2.9)$$

2.7 Public Consumption

Public consumption is the value of goods and services received by individuals from the public sector. Aggregate NTA public consumption finds its SNA counterpart in general government final consumption expenditures, according to which public consumption can be divided into collective and individual expenditures. Collective expenditures are typically those for general public services such as defense, public order and safety, economic affairs, environmental protection, etc.; examples of individual services include education, health, and social protection (Eurostat 2011).

Collective expenditures are public goods that benefit all the members of a population independent of their individual characteristics. Thus, in the NTA logic, the value of public collective consumption is distributed equally among individuals regardless of age. On the other hand, individual expenditures are targeted to individuals with specific characteristics and hence can be allocated by age.

As for private consumption, the NTA considers three categories of public consumption: education, health, and public consumption other than education and health. Aggregate values of general government final expenditures by function are reported in Table 2.5 in the appendix. The most important expenditure category is health, which represents 34.4% of total public consumption, followed by education (19.2%). Collective consumption (composed of general public services, defense, public order and safety, economic affairs, environment protection, housing, and community amenities) accounts for around 39.9% of total public consumption. Therefore, individual consumption (i.e., health, recreation, culture and religion, education, and social protection) represents the majority of public consumption (60.1%). The data and methods used to distribute public consumption for education and health are described in the following subsections.

2.7.1 *Public Education Consumption*

Public consumption for education refers to government expenditures for the provision of formal and informal education in the form of services provided both to individuals and on a collective basis; examples of the latter include research and development and nonclassified educational expenditures. Formal education expenditures are defined as government spending on primary, secondary, and higher education levels; informal education refers to expenditure on culture, religious studies, and other types of education. Individual consumption represents 95.1% of public expenditure for formal education, whereas the remaining 4.9% is allocated to collective services including research and development receiving 0.1% of education public spending (see Table 2.6 in the Appendix). Among individual expenditures, 50.2% is for secondary education, 37.0% is for pre-primary and primary education, and much less (6.7%) is for post-secondary education, of which 5.4% is for tertiary education and 1.3% for non-tertiary post-secondary education. Public informal and collective education expenditure is not targeted to particular groups and thus is allocated equally to the consumption of each individual. By contrast, public spending for formal education at the individual level benefits only the students enrolled in formal programs and can thus be allocated to the consumption of individuals by age, according to the following equation:

$$\text{CGE}(x) = \sum_i E_i(x) \cdot c_i, \quad (2.10)$$

where i is the educational level, c_i is the unit cost per student at the i educational level, and E_i is the number of students at the i educational level. Unit cost per student at each level of education is calculated as the ratio between public spending on education for the educational level i by the corresponding number of enrolled students. The unit cost of education within each level is assumed not to vary by age; for example, the cost of a 14-year-old high school student is equal to that for a 17-year-old high school student.

The information on the number of enrolled students by age for each educational level is found in administrative data from the Italian Ministry of Education, Universities and Research. This information is generally available by single-year age groups with some exceptions for which the number of students has been estimated on the basis of UDB IT-SILC microdata (Istat 2009).⁶

2.7.2 Public Health Consumption

Public health consumption consists of health care provided by the government directly to individuals, health care purchased by individuals and reimbursed through public programs, and collective services like health education and preventative programs. Table 2.7 in the Appendix reports public health consumption by COFOG group in absolute and relative terms. Classes of expenditure are also shown for each COFOG group. However, macro-aggregates for classes are not reported in that table, since Eurostat's database does not provide economic data at that level of detail.

As with education, health consumption includes expenditures on services provided on both individual and collective bases. Expenditures on individual services correspond to groups 7.1–7.3 in Table 2.7 whereas those for collective services correspond to groups 7.4–7.6. Individual services represent 97.8% of total government spending on health consumption. The largest categories of expenditure are hospital services (56.1%), outpatient services (30.4%), and medical products, appliances, and equipment (11.3%). Collective public health expenditures are not targeted to any specific group and hence are allocated in equal shares to the consumption of individuals. Conversely, government spending for health at the individual level is targeted to users whose age can vary significantly depending on the nature of the expenditure in question.

Ideally, health care provided directly by the government to individuals should be allocated to the consumption of individuals on the basis of administrative records (United Nations 2013). However, administrative data are not always available. At the European level, there is no administrative source providing comparable data on

⁶See Sect. 2.6 for a description of EU-SILC survey.

Table 2.2 Pharmaceutical products' equivalence scale by age groups and gender

Age groups	Males	Females	Total
0	0.73	0.73	0.73
1–4	0.73	0.73	0.73
5–14	0.38	0.38	0.38
15–44	0.47	0.71	0.59
45–64	1.20	1.20	1.20
65–74	1.96	1.96	1.96
75 and older	2.33	2.33	2.33

Source Agenzia Italiana del Farmaco (2010)

government spending for public health⁷ (Istenič et al. 2016). In the case of Italy, after an extensive review of the available information and data sources, macro-aggregates have been allocated to age by relying on information reported by the Ministry of Economy and Finance (Ministero dell'Economia e delle Finanze 2009) on the prevalent class of expenditure within the corresponding COFOG group. As for public consumption of medical products, appliances, and equipment (group 7.1 in Table 2.7), the main class of expenditure is represented by pharmaceutical products (class 2.1.1). The Italian Medicines Agency (Agenzia Italiana del Farmaco Agenzia Italiana del Farmaco 2010) has calculated an equivalence scale for the consumption of pharmaceutical products by age and gender (the values of the equivalence scale are reported in Table 2.2). Expenditures for the COFOG group in Table 2.7 are allocated to consumption by age, proportionally to values of the equivalence scales.

General and specialized medical services (classes 7.2.1 and 7.2.2) are the principal classes of expenditure for outpatient services (group 7.2). The per capita values of general medical services expenditures by age are determined at the national level in Italy for 2008 as follows: €56.70 for children aged 0–13 years, €38.62 for adults aged 14–78 years, and €54.11 for people aged 75 years and older. Hence, per capita values have been used to redistribute the expenditures on general medical services (7.2.1) by age. Meanwhile specialized medical services (7.2.2) have been attributed to consumption by age by relying on information from microdata on the health status of the population and the use of health services (Istat 2008b), a nationally representative survey carried out approximately once every 5 years with a sample of more than 50,000 households and 128,000 individuals distributed across 1465 municipalities in Italy.

Public expenditures for hospital services have been allocated to consumption by age on the basis of administrative data published in the annual report on hospital discharges (Ministero della Salute 2008) and microdata from Istat (2008b). The Ministry of Health provides data on the number of hospitalizations and the mean cost of hospitalization by 5-year age groups (Table 2.8 in the Appendix), with two

⁷The AGENTA project has been provided by the Aging Working Group (AWG) with pre-calculated age profiles of public health and long-term care consumption.

exceptions: the youngest age group (infants up to one year of age) and the oldest age group (75 years and over). The number of hospitalizations by single-year age groups has been calculated using survey microdata. The cost of hospitalization by single-year age group has been obtained by finding the product between the corresponding number of hospitalizations estimated through microdata and the mean cost of hospitalization reported by the Ministry, which is assumed not to vary by age within a given age group.

In general, age profiles of individual public health consumption suffer from a certain degree of approximation due to difficulties in accessing detailed data, especially those regarded as sensitive by governmental bodies. In the context of increasing longevity, it would be valuable to obtain more detailed estimates of public health expenditures for individuals at older ages, for which access to administrative data on hospital discharges would be needed.

2.8 The Public Intergenerational Reallocation System

Public transfers are current resource flows mediated by the government and implemented through laws and regulations at different administrative levels. Transfers consist of inflows to program beneficiaries and of outflows from taxpayers to fund those programs. If outflows are not sufficient to finance inflows, there is a transfer deficit that can be made up in two ways. Public asset income can be used to finance the public transfer deficit, giving rise to public asset-based reallocations. The other possibility takes place when asset income is insufficient to offset the transfer deficit, so that transfer programs must be financed partly through taking on public debt. In both cases there is an inflow for residents and an outflow for government. Conversely, if net public transfers are positive, there is a transfer surplus resulting from an excess of taxes over transferred public goods and services. In that case, the surplus is saved, generating an inflow for government and an outflow for households.

2.8.1 Public Transfers

Aggregate values of public transfer inflows are provided by Eurostat (2008d) in the European System of Integrated Social Protection Statistics (ESSPROS) and reported in Table 2.9 in the Appendix. Given that pensions represent the great majority of government spending on social protection, Table 2.9 distinguishes broadly between pensions and “other social protection” as a residual category. Aggregate values for social protection functions other than pensions are reported in Table 2.10 in the Appendix. ESSPROS was jointly developed in the late 1970s by Eurostat and EU member states in response to the need for a specific instrument of statistical observation of social protection and in response to the second article of

the 1957 Treaty of Rome, which recognizes the promotion of high levels of social protection and the development of the economic and social cohesion of EU states as a priority. The first ESSPROSS methodology was published in 1993; it was revised in 1996 and last updated in 2008 (Eurostat 2008e).

ESSPROSS defines social protection as all interventions intended to relieve individuals or households of the burden of a defined set of risks or needs: sickness and health care, disability, old age,⁸ survivors, family and children, unemployment, housing, and social exclusion not otherwise enumerated. These various risks or needs define the primary purpose for which resources and benefits are provided and identify the functions of social protection. Public transfer inflows can be provided in cash or in-kind, accounting for 52.3 and 47.7% respectively of total expenditures in this area. In-kind public transfers correspond to public consumption and, similarly, are divided into education, healthcare, and public consumption other than education and health. Thus, the macro-aggregate value of in-kind public transfers is equal to that of public consumption (see Sect. 2.5). Cash public transfers refer to payments received through the social protection system, such as pensions and subsidies.

Table 2.9 in the Appendix shows that social protection represents the largest public transfer inflow (46.7% of total inflows), followed by other public transfers (23.9%), health care (19.3%), and education (10.1%). Pensions in turn make up the vast majority of social protection spending, the remainder of which is composed of 44.3% for survivors, 27.4% for disability, 18.3% for families and children, 9.1% for unemployment, and 0.9% for other social exclusion (see Table 2.10 in the Appendix). Unlike other European countries, Italy's social protection expenditures for housing are absent.

Age profiles of in-kind public transfer inflows are equal to those of public consumption for the corresponding government function (see Tables 2.5 and 2.9). Age profiles of cash inflows have been estimated on the basis of administrative data from Italy's Istituto Nazionale della Previdenza Sociale (INPS) analyzed and published in collaboration with Istat, and UDB IT-SILC microdata. INPS-Istat data are provided in 5-year age groups, while EU-SILC microdata have been used to estimate single-year age profiles.

Public transfer outflows can be divided into three main categories: taxes on goods and services; taxes on income, profits, and capital gains; and social contributions. Age profiles of taxes on goods and services are based on those of private transfers, which in turn build on microdata from the HBS. Age profiles of taxes on income and social contributions are estimated with UDB IT-SILC microdata (Istat 2009), whereas microdata from the Survey on Household Income and Wealth

⁸The old age function consists of pensions (including anticipated old age pensions and partial pensions), care allowances other than medical care, and other cash benefits and benefits in-kind such as accommodation and assistance in carrying out daily tasks.

(SHIW; Banca d'Italia, Indagine sui bilanci delle famiglie italiane 2008) are used to estimate age profiles of taxes on income, profits, and capital gains.

The SHIW was initiated in the 1960s with the aim of collecting data on incomes and savings in Italian households. Over the years, the aim of the survey has been expanded to include wealth and other aspects related to households' economic and financial behavior. Until 1987, the survey was conducted with time-independent samples (cross sections) of households. In order to facilitate the analysis of changes in the phenomena being investigated, since 1989 part of the sample has comprised households interviewed in previous surveys, known as panel households. Beginning in 2010, SHIW has provided data on Italy to the Eurosystem's Household Finance and Consumption Survey, which is coordinated by the European Central Bank. The survey sample for 2008 consists of about 8,000 households and 20,000 individuals, selected in two stages, with municipalities and households as the primary and secondary sampling units respectively. Data are collected at both the household and individual levels. Information on the distribution of asset income and savings is reported at the individual level, so age averages can be directly calculated from SHIW microdata.

The use of the SHIW for the estimates of age profiles of savings and asset income represents a further example of the informational advantages that can be derived by the use of national data sources. In the framework of the harmonized NTA methodology for European countries, estimates of the age profiles of taxes on asset income, profits, and capital gains build on a number of variables from EU-SILC that are only provided at the household level (see Istenič et al. 2016). In order to estimate the age profiles, the value of these variables is assumed to be assigned entirely to the head of household, but the use of this assumption is not necessary for Italy, where individual SHIW data on savings and asset income allow for direct estimates of the corresponding age-specific averages.

2.8.2 *Public Asset-Based Reallocations*

Table 2.11 in the Appendix shows the mechanisms underlying the public reallocation system. As explained in Sect. 2.7, asset-based reallocations are a balancing item between public transfer outflows and inflows. Therefore, public asset reallocations are equal to the transfer deficit or surplus. Public asset reallocations consist of two flows: public asset income and savings. Public asset reallocations are given by the difference between asset income and savings. Public asset income and savings are allocated to age according to the age profiles of taxpayers, so age profiles of public asset reallocations are estimated using the same procedure followed for allocating public transfer outflows.

2.9 The Private Intergenerational Reallocation System

The NTA considers two kinds of private intergenerational transfers, inter-household and intra-household. Inter-household transfers occur between different households and are mediated by households or NPISH; intra-household transfers occur within the same household between members of that household. As detailed in the following subsections, macro-aggregates for private transfers are not available from the SNA or any other official data source and must be estimated indirectly, whereas macro-aggregates for inter-household transfers can be estimated from the limited information available from survey microdata. The quantification of private transfers represents a major contribution of the NTA to detailing national accounts and the development of welfare measures.

2.9.1 *Inter-household Transfers*

Inter-household transfer aggregates are calculated using UDB IT-SILC microdata (Istat 2009). UDB IT-SILC microdata contain information on the amount of regular inter-household cash transfers paid (outflows) and received (inflows). In a closed economy, total inter-household transfer inflows must equal outflows. However, inflows and outflows can differ due to flows to and from the rest of the world. Therefore, population aggregates for inter-household inflows and outflows based on UDB IT-SILC are adjusted to ensure their consistency with the aggregate net flows to the rest of the world reported in the SNA.

In the NTA framework, inter-household transfers are assigned to heads of households, given that in most cases no information is available at the individual level, which is also true of the Eurostat data source reported by Istenič et al. (2016). Therefore, age profiles of inter-household transfer inflows and outflows are estimated by tabulating sample values using the age of heads of households. The main reason for the adoption of this age criterion is that the general absence of information in this regard does not allow for reliable assumptions on the direction of flows, especially considering the heterogeneity of NTA countries and the need to ensure comparability of the results. However, this age allocation criterion has long been debated within the NTA project due to a major conceptual limitation: the age profiles depend on the definition of head of household and may not reflect the actual age directions of the flows. Once again, the use of original national data sources represents an advantage in terms of information: the Italian UDB IT-SILC exceptionally provides information about inter-household transfers paid and received by household members. Thus, age profiles for inter-household transfers have been directly calculated on the basis of UDB IT-SILC microdata.

2.9.2 Intra-household Transfers

As noted above, due to a lack of data, population aggregates for intra-household transfers are estimated indirectly as the balancing item between private consumption and disposable income at each age.

Computing intra-household transfers requires extensive data preparation. The estimates require two kinds of data: a nationally representative household survey that provides information about household features such as number of members and socio-demographic characteristics like gender, age, family relation, etc., and previously estimated per capita age profiles. UDB IT-SILC microdata were used as the representative household survey, because they are based on a nationally representative sample of sufficient size (20,928 households and 52,433 individuals) to provide a reliable estimate of the socio-demographic structure of Italian families. Through that microdata, an initial data set containing the following variables was created: identification codes for households and household members, age, relationship to head of household, and sample weights. Then, a second data set was created, containing the previously estimated per capita age profiles of labor income, current private consumption, durable private consumption, net inter-household transfers, public cash transfer inflows, and taxes paid. Linking the two data sets makes it possible to associate the appropriate per capita age profile with each household member in the sample. This led to the creation of a third data set, containing the following variables for each individual i in the household j :

$x(j, i)$ = age of the household member i in the household j ;
 $\text{head}(j, i)$ is 1 if the household member i is the household head; otherwise is 0;
 $\text{YL}(j, i)$ is the labor income;
 $\text{CFC}(j, i)$ is the current private consumption;
 $\text{TGCI}(j, i)$ is the public cash transfer inflows;
 $\text{TGT}(j, i)$ is the taxes paid;
 $\text{TFB}(j, i)$ is the net inter-household transfers; and
 $w(j, i)$ is the sample weight.

Estimating per capita age profiles of intra-household transfers is a fairly complex process that requires five main steps. The first consists of computing the deficit or surplus, given by the difference between disposable income and private consumption, for each member i of the household j . Disposable income (YD) is equal to labor income plus public cash transfer inflows plus net inter-household transfers, less taxes paid:

$$\text{YD}(j, i) = \text{YL}(j, i) + \text{TGCI}(j, i) + \text{TFB}(j, i) - \text{TGT}(j, i). \quad (2.11)$$

If disposable income exceeds consumption, the member i of the household j has a surplus defined in the equation as SUR:

$$\text{SUR}(j, i) = \text{YD}(j, i) - \text{CFC}(j, i). \quad (2.12)$$

Conversely, if consumption exceeds disposable income, the member i of the household j has a deficit (DEF) given by

$$\text{DEF}(j, i) = \text{CFC}(j, i) - \text{YD}(j, i). \quad (2.13)$$

Household disposable income, current consumption, and surplus and deficit are given by the sum of the corresponding values for the household's components:

$$\left\{ \begin{array}{l} \text{YD}(j) = \sum_i \text{YD}(j, i) \\ \text{CFC}(j) = \sum_i \text{CFC}(j, i) \\ \text{SUR}(j) = \sum_i \text{SUR}(j, i) \\ \text{DEF}(j) = \sum_i \text{DEF}(j, i) \end{array} \right. \quad (2.14)$$

Household members with a deficit receive transfers (inflows) from household members with a surplus. If household disposable income is insufficient to fund current household private consumption, the household must fund the consumption of its deficit members by asset-based reallocations such as asset income or by dis-saving, if necessary. If household disposable income exceeds household consumption, the residual amount is assumed to be transferred to the head of household and saved.

The second step is to calculate a “tax rate” in order to estimate the proportion of individual surplus that must be transferred to fund the consumption of household members with a deficit. If the overall household deficit is higher than the household surplus, then the tax rate is equal to 1; otherwise the tax rate is given by the ratio between the household deficit and the household surplus:

$$\text{tax}(j) = \min\left(1, \frac{\text{DEF}(j)}{\text{SUR}(j)}\right). \quad (2.15)$$

By assumption, any surplus held by members who are not the head of the household that is not taxed for current consumption transfers is assigned to the head of household to be saved. In other words, the head of household receives whatever surplus that is not transferred to other household members. The third step is to estimate intra-household transfer inflows and outflows, for which it is necessary to distinguish between the head of the household and its other members. For non-heads, intra-household transfer outflows are equal to the tax rate times the surplus; they equal zero for households with a deficit:

$$\text{TFWO}(j, i) = \text{tax}(j) \cdot \text{SUR}(j, i). \quad (2.16)$$

For heads of households, the outflows consist of the tax rate times the surplus plus any shortfall that the head must fund using asset-based reallocations. For household members in deficit, intra-household transfer inflows are equal to their deficit, while for those in surplus they are equal to zero. For heads of households, transfer inflows are given by

$$\text{TFWI}(i, j) = \text{DEF}(i, j) + [\text{DEF}(i) - \text{SUR}(i)]. \quad (2.17)$$

In other words, if the household has an overall deficit, the head of household has to fund his or her own deficit through dis-saving or asset sales, which are not recorded as transfers but as asset-based reallocations (see Sect. 2.9.3). If the household has a surplus, the inflow is equal to the head of household's deficit plus the value of the surplus.

The fourth step is to estimate private intra-household transfers inflows and outflows by sector—education, health, other consumption—proportionally to the combined consumption of those household members with a deficit. Finally, per capita age profiles of intra-household transfer inflows and outflows are obtained as corresponding weighted age averages for all individuals in the sample. Net intra-household transfer is calculated as the difference between inflows and outflows.

2.9.3 *Private Asset-Based Reallocations*

Asset-based reallocations mediated by the private sector, like those mediated by the public sector, include two main flows: asset income and savings, representing an inflow and an outflow for individual household members, respectively (the SNA macro-aggregates of private asset income and savings are reported in Table 2.12 in the Appendix).

Private asset income consists of net property income plus capital income for households, corporations, and NPISH, whose aggregate values are provided by the SNA. Property income is classified by the NTA into two categories: interest and other property income. Private capital income (inclusive of taxes on production less subsidies) is the return on capital owned by households and corporations and includes three components: (i) the net operating surplus of households, such as capital income arising from owner-occupied houses; (ii) the net operating surplus of corporations⁹ and NPISH, measured as the difference between revenues and operating costs; and (iii) the portion of mixed income of the household sector that is

⁹The operating surplus of the corporate sector is included since it is not retained by the corporation but is distributed to the individuals who have provided the capital.

estimated to be a return to capital, assuming that one-third of mixed income is a return to capital and two-thirds is a return to labor.

As for most NTA countries (see Istenič et al. 2016), all asset income is by assumption assigned to the head of household, and age profiles of private asset-based reallocations are based on the age group of the head of household. However, age profiles of asset income have been estimated on the basis of microdata from the SHIW (Banca d'Italia 2008), which reports information on the distribution of asset income and savings by age and sex.

Finally, private savings are estimated as the final balancing item between age reallocations and the LCD or LCS at each age. By rearranging the terms used in the NTA budget, we obtain

$$S(x) = \text{LCD}(x) - [\tau^+(x) - \tau^-(x)] - \text{YA}(x). \quad (2.18)$$

In other words, savings are equal to the difference between net transfers plus asset income minus the LCD; if the former exceeds the latter, the difference is saved. Conversely, if the LCD exceeds net transfers and asset income, then consumption must be financed by dis-saving.

2.10 Smoothing and Macro-Control Adjustments

Per capita age profiles are mainly based on sample estimates. These estimates can be noisy due to sample errors, particularly at ages with relatively few observations like the oldest age groups. In order to reduce these kinds of variations, per capita age profiles are smoothed. However, in some cases significant age variations are not an effect of sample errors but reflect the actual age patterns of the phenomenon being considered. One example is the higher health consumption of newborns compared to the immediately subsequent ages. Another important example is represented by education consumption, especially in its public form, for which expenditures are significantly age-targeted and can be subject to significant changes from one year to another as a reflection of transitions to different levels of education. In such cases, the smoothing procedure has not been applied, since its purpose is to reduce only sampling variance, not actual variance.

Friedman's Super Smoother method (Friedman 1984) is used to smooth per capita age profiles through the supsum function in R software (<http://www.r-project.org/>), which incorporates sample weights. Once per capita age profiles are smoothed, preliminary aggregate age profiles can be estimated using population data by age; age averages are multiplied by the corresponding population size. Summing up preliminary estimates for all ages, we obtain an estimate of the total value for the overall population. However, this total may not coincide with the corresponding value provided by the SNA, so the estimates must be adjusted using a multiplicative factor given by the ratio between the SNA values and the estimated values developed in this chapter.

2.11 Concluding Remarks

This chapter has presented the specific data and methods used to estimate the economic lifecycle and age reallocations in Italy for 2008, based on the NTA methodological and conceptual framework. One of its aims was to make visible the linkage between the global NTA methodology as published by the United Nations (2013), the European harmonized methodology based on publicly available Eurostat data (Istenič et al. 2016), and the detailed NTA estimates at the national level, with Italy as a case study. While harmonized European data from the ESA have been used to derive the economic macro-aggregates, data at the national level have been used to derive age-specific averages of the economic macro-aggregates. In some cases original national files of microdata produced in the IESS framework on persons and households have been used. UDB IT-SILC microdata provided by Istat for the EU-SILC have been used to disaggregate labor income by single-year age groups. In other cases, specific data sources at the national level have been used; for example, SHIW data provided by Banca d'Italia have been employed to estimate age profiles of private asset income. Administrative data sources at the national level have also been used to derive age profiles of public consumption and transfers.

The chapter shows that in a number of cases the use of data sources available at the national level allowed for more detailed estimates of age-specific schedules of the economic activities. For example, the use of UDB IT-SILC microdata permitted detailed estimates even at older ages, whereas in the EU-SILC, the oldest elements of the population are aggregated into a single 80+ age group. UDB IT-SILC microdata also allowed for the direct calculation of age profiles of inter-household transfers, thus removing the simplifying head-of-household assumption and providing more accurate results. In fact, the use of specific data sources and specific methods can be implemented to obtain detailed estimates at the national level without significantly compromising opportunities for cross-country comparison. However, this would not be possible without the global NTA manual and the underlying research effort to standardize definitions and methodologies. The use of a European methodology built on harmonized Eurostat data sources represents a logical step for the systematic generation of the accounts for all European countries, which represents a highly desirable development for European statistics.

Appendix: Aggregate Macro-values

See Tables 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11 and 2.12.

Table 2.3 Labor income, values at current prices, Italy 2008

Labor income and its components	Euro (million)	Percentage
Labor income	830,248	100.0
Earnings	680,279	81.9
<i>Compensation of employees</i>	658,890	79.3
<i>Labor share of taxes less subsidies on production</i>	21,389	2.6
Self-employment (labor share of gross mixed income)	149,969	18.1

Source Author's elaboration on Eurostat (2008a)

Table 2.4 Final consumption expenditure of households by purpose, values at current prices, Italy, 2008

Purpose of expenditure (COICOP Divisions)	Euro (million)	Percentage
Total	978,916	100.0
Food and nonalcoholic beverages	141,934	14.5
Alcoholic beverages, tobacco, and narcotics	40,546	4.1
Clothing and footwear	65,252	6.7
Housing, water, electricity, gas, and other fuels	210,522	21.5
Furnishings, household equipment, and routine maintenance	66,970	6.8
Health	31,197	3.2
Transport	125,003	12.8
Communications	26,735	2.7
Recreation and culture	67,023	6.9
Education	9170	0.9
Restaurants and hotels	89,232	9.1
Miscellaneous goods and services	105,333	10.8

Source Author's elaboration on Eurostat (2008b)

Table 2.5 General government: final consumption expenditure by function, values at current prices, Italy, 2008

Function of expenditure (COFOG divisions)	Euro (million)	Percentage
Total	315,406	100.0
General public services	41,707	13.2
Defense	22,093	7.0
Public order and safety	27,987	8.9
Economic affairs	22,284	7.1
Environment protection	4802	1.5
Housing and community amenities	6794	2.2
Health	108,363	34.4
Recreation, culture, and religion	6745	2.1
Education	60,661	19.2
Social protection	13,970	4.4

Source Author's elaboration on Eurostat (2008c)

Table 2.6 General government final consumptions expenditure for education groups, values at current prices, Italy, 2008

Code	Education COFOG groups	Euro (million)	%
09	Education	60,661	100.0
09.1	Pre-primary and primary education	22,412	37.0
09.2	Secondary education	30,439	50.2
09.3	Post-secondary non-tertiary education	791	1.3
09.4	Tertiary education	3283	5.4
09.5	Education not definable by level	702	1.2
09.6	Subsidiary services to education	2015	3.3
09.7	R&D Education	86	0.1
09.8	Education n.c.	933	1.5

Source Author's elaboration on Eurostat (2008c)

Table 2.7 General government final consumptions expenditure for health groups and classes, at current prices, Italy 2008

Code	Health COFOG groups and classes	Euro (million)	%
7	Health	108,363	100.0
7.1	Medical products, appliances, and equipment	12,287	11.3
7.1.1	<i>Pharmaceutical products</i>		
7.1.2	<i>Other medical products</i>		
7.1.3	<i>Therapeutic appliances and equipment</i>		
7.2	Outpatient services	32,933	30.4
7.2.1	<i>General medical services</i>		
7.2.2	<i>Specialized medical services</i>		
7.2.3	<i>Dental services</i>		
7.2.4	<i>Paramedical services</i>		
7.3	Hospital services	60,743	56.1
7.3.1	<i>General hospital services</i>		
7.3.2	<i>Specialized hospital services</i>		
7.3.3	<i>Medical and maternity center services</i>		
7.3.4	<i>Nursing and convalescent health services</i>		
7.4	Public health services	621	0.6
7.5	R&D health	899	0.8
7.6	Health n.e.c.	880	0.8

Source Author's elaboration on Eurostat (2008c)

Table 2.8 Hospital admissions and average cost by age and gender, Italy 2008

Age groups	Hospital admissions			Average cost		
	Male	Female	Total	Male	Female	Total
Total	3,558,089	4,040,823	7,598,912	3511	3026	3253
<1	150,144	122,156	272,300	2590	2586	2588
1–4	116,974	84,612	201,586	1771	1802	1784
5–9	77,249	55,523	132,772	1802	1867	1829
10–14	70,494	51,862	122,356	1957	1983	1968
15–19	83,896	80,740	164,636	2374	2038	2209
20–24	86,823	146,217	233,040	2533	1983	2188
25–29	92,171	253,028	345,199	2623	1965	2141
30–34	112,375	363,529	475,904	2723	1987	2161
35–39	133,124	309,961	443,085	2869	2139	2358
40–44	156,090	204,747	360,837	3084	2544	2778
45–49	168,773	177,369	346,142	3326	2861	3088
50–54	190,276	179,154	369,430	3584	3048	3324
55–59	237,444	194,627	432,071	3823	3324	3598
60–64	293,139	223,320	516,459	3992	3550	3801
65–69	355,054	268,883	623,937	4105	3770	3961
70–74	384,834	312,043	696,877	4171	3957	4075
75+	849,229	1,013,052	1,862,281	4009	3900	3950

Source Ministero della Salute (2008)

Table 2.9 Public transfers inflows classified by NTA Sectors, Italy, 2008

NTA Sectors	Values at current prices (euro, million)			Percentage values		
	In-kind	Cash	Total	In-kind	Cash	Total
All sectors	315,406	287,450	602,856	100.0	100.0	100.0
Education	60,661	0	60,661	19.2	0.0	10.1
Health care	108,363	8076	116,406	34.3	2.8	19.3
Social protection	13,970	267,420	281,390	4.4	93.0	46.7
<i>Old age</i>	<i>5395</i>	<i>193,249</i>	<i>198,644</i>	<i>1.7</i>	<i>67.2</i>	<i>33.0</i>
<i>Other Social Protection</i>	<i>8575</i>	<i>74,171</i>	<i>82,746</i>	<i>2.7</i>	<i>25.8</i>	<i>13.7</i>
Other public transfers	132,445	11,954	144,399	42.0	4.2	23.9

Source Author's elaboration on Eurostat (2008c, d)

Table 2.10 Other Social Protection classified by functions, values at current prices, Italy, 2008

Functions	Euro (million)	Percentage
Other Social Protection	82,746	100.0
Disability	22,700	27.4
Survivors	36,636	44.3
Family and Children	15,144	18.3
Unemployment	7508	9.1
Housing	0	0.0
Social exclusion n.e.c.	758	0.9

Source Author's elaboration on Eurostat (2008d)

Table 2.11 Public asset-based reallocations, at current prices, Italy 2008

Public asset-based reallocations	Euro (million)
Net Public Transfers	0
Public Transfer Inflows	602,856
<i>In-kind</i>	309,512
<i>Cash</i>	293,344
Public Transfer Outflows	602,856
<i>Taxes and Social contributions</i>	649,086
<i>Transfer Surplus/Deficit</i>	-46,230
Public Asset-based Reallocation	-46,230
<i>Public Asset Income</i>	-62,246
<i>Public Saving</i>	-16,015

Source Author's elaborations on Eurostat (2008a)

Table 2.12 Private asset-based reallocations, at current prices, Italy 2008

Private asset-based reallocations	Euro (million)
Private asset-based reallocations	320,886
Private asset income	377,910
Private capital income	324,727
Private property income, net	53,183
<i>Private interest, net</i>	49,248
<i>Private other property income, net</i>	3935
Private saving	57,024

Source Author's elaborations on Eurostat (2008a)

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